



6072

6072
PREMIUM TYPE**MEDIUM-MU TWIN TRIODE**

9-PIN MINIATURE TYPE

For use in industrial and military applications critical as to microphonics and in which dependability is paramount. Characteristics are similar to those of the 12AY7.

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage.	12.6	6.3	ac or dc volts
Current.	0.175	0.35	 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid to plate (Each unit).	1.4	μf
Grid to cathode and heater (Each unit) . .	1.5	μf
Plate to cathode and heater:		
Unit No.1.	0.5	μf
Unit No.2.	0.38	μf

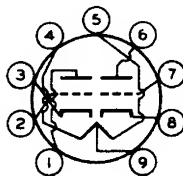
Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage.	250	volts
Grid Voltage	-4	volts
Amplification Factor	44	
Plate Resistance (Approx.)	25000	ohms
Transconductance	1750	μmhos
Plate Current.	3	ma
Grid Voltage (Approx.) for plate $\mu\text{a} = 10$. .	-8	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length.	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip) .	1-9/16" $\pm$ 3/32"
Diameter	0.750" to 0.875"
Dimensional Outline.	See General Section
Bulb	T6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW	9A

Pin 1 - Plate of Unit No.2
 Pin 2 - Grid of Unit No.2
 Pin 3 - Cathode of Unit No.2
 Pins 4 & 9 - Heater of Unit No.2
 Pins 5 & 9 - Heater of Unit No.1



Pin 6 - Plate of Unit No.1
 Pin 7 - Grid of Unit No.1
 Pin 8 - Cathode of Unit No.1
 Pin 9 - Heater Mid-Tap

^o Without external shield.

6072



6072

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AMPLIFIER — Class A₁

Values are for Each Unit

Maximum Ratings, Absolute Values:

PLATE VOLTAGE	330 max.	volts
GRID VOLTAGE:		
Positive-bias value	0 max.	volts
PLATE DISSIPATION	1.65 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	100 max.	volts
Heater positive with respect to cathode	100 max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).	165 max.	°C

Typical Operation:

*In low-level stages of high-gain af amplifier
with parallel-heater arrangement*

Plate-Supply Voltage.	150	volts
Plate-Load Resistor	20000	ohms
Grid Resistor	0.1	megohm
Cathode Resistor.	2700	ohms
Cathode Capacitor	40	μf
Voltage Gain.	12.5	

Typical Operation as Resistance-Coupled Amplifier:

*See RESISTANCE-COUPLED AMPLIFIER CHART
at end of tabulated data for this type*

SPECIAL RATINGS & PERFORMANCE DATA

Shock Rating:

Impact Acceleration	600 max.	g
Tubes are held rigid in four different positions in a Navy-Type, High-Impact (flyweight) Shock Machine and are subjected to 20 blows at a hammer angle of 42° (equivalent to the specified maximum impact acceleration).		

Fatigue Rating:

Vibrational Acceleration.	2.5 max.	g
This test is performed for a period of 100 hours minimum at a frequency of 25 cycles per second.		

Heater-Cycling Life Performance:

Cycles of Intermittent Operation.	2000 min.	cycles
Under the following conditions: heater volts = 7.5 cycled one minute on and one minute off, heater 135 volts positive with respect to cathode, and all other elements connected to ground.		



6072

6072

MEDIUM-MU TWIN TRIODE**OPERATING CONDITIONS AS RESISTANCE-COUPLED AMPLIFIER
(Each Unit)****With Effective Source Impedance of 200 ohms (Approx.)**

	90			
	0.1	0.24	0.51	
Plate-Supply Voltage				volts
Plate Load Resistor				megohm
Grid Resistor (Of following stage)	0.24	0.51	1	megohm
Cathode Resistor	2100	4800	10000	ohms
Peak Output Voltage	14	16	16	volts
Voltage Gain [▲]	25	27	27	

	180			
	0.1	0.24	0.51	
Plate-Supply Voltage				volts
Plate Load Resistor				megohm
Grid Resistor (Of following stage)	0.24	0.51	1	megohm
Cathode Resistor	1500	3100	7200	ohms
Peak Output Voltage	34	35	35	volts
Voltage Gain [▲]	28	28	29	

	300			
	0.1	0.24	0.51	
Plate-Supply Voltage				volts
Plate Load Resistor				megohm
Grid Resistor (Of following stage)	0.24	0.51	1	megohm
Cathode Resistor	1300	2700	6000	ohms
Peak Output Voltage	64	64	64	volts
Voltage Gain [▲]	29	31	31	

With Effective Source Impedance of 0.1 Megohm (Approx.)

	90			
	0.1	0.24	0.51	
Plate-Supply Voltage				volts
Plate Load Resistor				megohm
Grid Resistor (Of following stage)	0.24	0.51	1	megohm
Cathode Resistor	3000	6200	12000	ohms
Peak Output Voltage	17	18	20	volts
Voltage Gain [▲]	23	25	26	

	180			
	0.1	0.24	0.51	
Plate-Supply Voltage				volts
Plate Load Resistor				megohm
Grid Resistor (Of following stage)	0.24	0.51	1	megohm
Cathode Resistor	1900	4100	8100	ohms
Peak Output Voltage	38	41	44	volts
Voltage Gain [▲]	27	28	29	

[▲] At 2 volts (rms) output.

Note: Coupling capacitors should be selected to give desired frequency response. Cathode resistors should be adequately bypassed.

6072



6072

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Plate-Supply Voltage	300			volts
Plate Load Resistor	0.1	0.24	0.51	megohm
Grid Resistor (Of following stage)	0.24	0.51	1	megohm
Cathode Resistor	1600	3400	6700	ohms
Peak Output Voltage	68	72	76	volts
Voltage Gain [▲]	28	30	30	

[▲] At 2 volts (rms) output.

Note: Coupling capacitors should be selected to give desired frequency response. Cathode resistors should be adequately bypassed.